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A LECTURE ON EPISTAXIS, VEL HÆMORRHAGIA NASI.

By N. CHAPMAN, M. D., *Professor of the Theory and Practice of Physic, in the University of Pennsylvania.*

[Reported for this Journal.]

As unhappily has the first of these titles, signifying distillation, been selected as most others, to signify the varieties of hæmorrhage, it really having no meaning in its present application. The second, *hæmorrhagia nasi*, expresses precisely, what is desired to be conveyed, and should be adopted, to the exclusion of the ancient term.

Bleedings from the nose may be, as the other hæmorrhages, either active or otherwise. The first state is often preceded by evidence of undue determination of blood to the head, as a sense of fulness, or tensive pain, vertigo, tinnitus aurium, or other noises, flashes of light before the eyes, which are sometimes injected and red, a flushed, tumid countenance, heat and itching in the nostrils, with even a slight degree of swelling, attended by throbbing of the carotid and temporal arteries, and activity of pulse. It sometimes puts on a more distinct febrile character, and here, previously to an attack, there is a cold fit succeeded by fever, or only alternate chills and flushes, observing in the return of the paroxysms, with more or less precision, the order of regular intermittents,—while, in other instances, it comes on without any premonition whatever, a gush of blood following the slightest exertion, or any excitement.

As the vessels spread over the Schneiderian membrane are exceedingly numerous, forming a complete reticulated texture, with a thin and delicate covering, and very much exposed, we are, at all times, peculiarly liable to this hæmorrhage, but it is most apt to happen at an early age, again towards maturity, and on the decline of life. Menstruation occurring, a new train of action is established, and it is comparatively seldom met with in women, where this function is uninterruptedly performed.

Distinct from the period of life, which certainly has an influence, the predisposition to epistaxis chiefly consists in a certain conformation, as the short neck and large head, by which blood is disproportionately invited to the part. It takes place, however, under very different circumstances.* Commonly to be met with in the full or plethoric, the opposite condition is not exempt

from its occurrences, provided there are irregularities in the circulation, with special directions of blood to the head. Numerous circumstances conduce to the latter effect, among which are violent exercises, certain efforts in a bent position, straining at stool, also loud speaking or singing, or sneezing or coughing, playing on wind instruments, exposure to intense heat, or the reverse, cold, and especially cold feet, stimulating ingesta, constipated bowels, tight lacing, or cravat. Moreover, it is occasioned by mental emotions, rage or terror, or a very excited imagination, or intense study, or anxiety, with insomnolency. Even to the most trivial causes, is it sometimes to be traced. Thus, Bruyerin gives an example in which the nostrils flowed with blood upon smelling at an apple—Rhodius upon smelling a rose—and Blanchard upon the ringing of bells.

As a secondary affection, epistaxis frequently occurs from cerebral fever, of high excitement, as well as other diseases, acute or chronic, among which visceral obstructions are very apt to induce it, and, I may add, that it is often consequent on suppression of the catamenial and hæmorrhoidal discharges.

Mainly, in these modes, is epistaxis in its several grades of activity produced, and when purely passive, to which state I think it more liable than any hæmorrhage, it must be usually assigned to changes in the blood itself, wrought by those circumstances formerly enumerated, by which the vital powers are impaired, and it rendered more fluid. But what I have said, has reference only to the etiology of epistaxis in its common presentations. As other hæmorrhages, it sometimes prevails so generally as to amount to an epidemic, and to this character, I am inclined to believe, it is particularly disposed. The most remarkable instance, perhaps, of such an occurrence, is to be found in Morgagni, who states that a great mortality took place from it in Tuscany, and other parts of Italy. During the year 1823, hæmorrhage of every description, though mostly from the nose, was observed among us, extremely copious, and difficult of suppression. No satisfactory explanation can be given of these occasional wide-spread prevalences of hæmorrhage. Certainly, they are not owing to the excesses or variations of temperature, or the usual states of the atmosphere. But the latter may undergo some other change at the period, and from the well-known influence of its rarefaction in this respect, such may be that change.

Epistaxis cannot be confounded with any other affection, and the only concern as to the diagnosis, refers to the discrimination of its own varieties, having regard, in the first place, to the mode of its production, and next to its precise character

* Epistaxis is often the result of blows or falls, or other acts of violence. Cases, however, occasioned by accidents, do not come within the definition of vital hæmorrhage.

and the state of system with which it is associated. These are particulars, so easily learnt by an investigation of the case, that the subject may be dismissed without further remark.

Not in excess, the active form of this hæmorrhage is to be deemed salutary, whether it occurs in a general plethoric condition, or in special determinations,—and hence the relief from it, in the excitement of fevers, and, perhaps, in every acute, inflammatory, or active congestive disease. No one, indeed, who has not witnessed it, can well appreciate the effect of the loss of even a few ounces of blood from this source, in the cerebral affections. An explanation, however, of the fact, is afforded in the arrangement of the vessels of the nasal lining. These are supplied chiefly from the internal maxillary artery, which, inosculating freely with some of the ramifications of the internal carotid, blood is diverted from the brain, and its oppressions mitigated or relieved. But the consequence of this hæmorrhage is very much the reverse, when of a less active, and, still more, of a passive nature, or it is postponed to the advanced stage of these affections, having then only a tendency to increase exhaustion, and is, indeed, mostly to be considered of fearful import.

Being active, and original to the part whence the effusion takes place, it is of easy management, and difficult or troublesome, and even dangerous, under opposite circumstances, and the more so, if derived from obstructions or other organic lesions of the thoracic or abdominal viscera.

Confirmed into a habit, it is uniformly to be dreaded. Hippocrates remarks, that thus subjected, young persons are apt to incur diseases of the chest, as pleuritis, pneumonitis, hæmoptysis, and consumption, probably owing to a metastasis of the nasal irritation to the lungs. But such not taking place, it is held to have a contrary effect, or preventive of pulmonary affections.

By the long continuance of it, the system becomes exceedingly deranged, and health impaired in various ways. Even the more recent attacks of it sometimes present the most formidable aspect, proving exceedingly intractable or utterly unmanageable. No hæmorrhage is occasionally more profuse, or in which larger quantities of blood are lost, and among other instances which might be cited to this purport, Bartholin mentions a case of forty-eight pounds—Rhodius another of eighteen pounds, within thirty-six hours, and a respectable writer in the *Leipsic Acta Erudita*, a third, of not less than seventy-five pounds within ten days. The *Ephemeræ* of Natural Curiosities contain a case where the quantity is not stated, from the difficulty of taking an account of it, which continued, without cessation, for six weeks.*

In 1820, I attended an elderly gentleman, who, during a night, must have lost several quarts. He frequently fainted, on which there was uniformly a suspension of the flow, recurring, however, on his revival.

* Good.

Nearly about the same time, one of our most distinguished citizens died of this hæmorrhage, after three weeks' continuance, which the best skill could not control. As well from his general aspect, as that of the blood, which was thin and nearly colourless, he must have become exsanguineous. More recently, I was consulted in the progress of such an attack, in the vicinity of this city, which ended fatally. Cases of this kind usually occur in persons advanced in life, and of very vitiated habits, having their viscera, the liver or spleen, much disordered. They often prove mortal.

Of the morbid phenomena, on dissection, in epistaxis, I have no knowledge, so far as regards the immediate seat of it, the case not being of sufficient importance to have attracted attention. They may, however, be presumed, from analogy, to be such as are presented in other hæmorrhages of the mucous membrane. Extraneous formations, as polypi, fungoid and other growths, occasionally productive of bleedings, are not properly incidents of spontaneous or vital hæmorrhage. In the secondary forms of the affection, we often discover great disorder of the thoracic and abdominal viscera, the lungs, the heart, the alimentary tube, the liver and spleen especially.

Little need be said of the pathology of epistaxis, it being also, in this respect, analogous to the hæmorrhages of other mucous surfaces, and hence I shall dismiss it with merely suggesting the resemblance between it, in its active form especially, to apoplexy, in the causes and prelude symptoms, the direction of the extravasation of blood from the nostrils or brain being determined, as it were, accidentally. This is one of the most interesting views in which the affection can be contemplated.

(To be continued.)

PHILADELPHIA DISPENSARY.

Report of Cases treated from the 1st to the 31st of January, inclusive.

Whole number	-	-	-	195
Discharged cured	-	-	-	130
Dead	-	-	-	11—141

Remaining	-	-	-	54
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Amongst the deaths, there were from

Phthisis	-	-	-	-	5
Pleuro-pneumonia	-	-	-	-	1
Double pneumonia	-	-	-	-	2
Pneumonia supervening on mania-a-potu	-	-	-	-	1
Cynanche trachealis	-	-	-	-	1
Uncertain	-	-	-	-	1

Total	-	-	-	-	11
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ERRATUM IN No. 7.—In Prof. HORNER'S Clinical Lecture, page 110, fortieth line from top, first column, for "*making sounds incredibly distressingly sonorous*," read "*making sounds inaudible to most persons audible, and the common sounds distressingly sonorous*."

FOREIGN CORRESPONDENCE.

To the Editors of the Medical Examiner.

London, January 15th, 1839.

GENTLEMEN,—I hope you will have received ere this arrives, a long letter* I had the honour to address to the Editors of the Medical Examiner. Since our last we have passed much of our time in the Royal College and British Museum—two exhaustless resources of amusement and instruction; and, in connexion with the practice and museums of the various hospitals and medical schools of this boundless metropolis, constituting a most valuable resort for the student or physician who has already finished a practical course of studies in the less expensive institutions of Paris. Agreeably to the appointment alluded to in our last, we waited on Sir Astley Cooper, to witness his interesting operation on the rabbit, in which, and in other small animals, he induces death in a very short space of time, by the simultaneous pressure on the carotid and vertebral arteries of both sides,—and, as he avers, absolutely without *pain* to the animal. He caused me to repeat the experiment before him, in order to assure himself that we adequately comprehended the *modus operandi*.

We then took our leaves, with the letters of introduction, which he had so obligingly offered us, to MM. Roux, Velpeau, Lisfranc, and Fisher, of Paris.

During our visit to the Royal College of Surgeons this morning, Mr. Owen afforded us a microscopical view of the new species of Entozoon, discovered by him in 1835; it exists, in incalculable numbers, in some men, women, and children, both in healthy and in diseased bodies,—the muscles appear studded over with white dots, as if disseminated with calcareous depositions,—and those most commonly affected are the great pectoral, latissimus dorsi, abdomines, &c.; no muscles, however, being exempt. The worms have also been detected in Prussia, but not as yet in Paris. As Mr. Owen has already well described this parasite, under the name of "*Trichina spiralis*," in the Encyclopædia of Anatomy and Physiology of Tod and others, I have only to add, that Mr. Owen kindly presented me with specimens, requesting me to ascertain if the same exist in Americans.

We have been exceedingly interested in attending the meetings of the various learned societies

* This letter was probably in the mail-bag of one of the lost packets.—EDS.

in London; in fact, every evening in the week might be thus advantageously spent. The Royal Society, the Linnæan, and Geological, meet once a fortnight, all on different nights, and a club dinner is given by each immediately preceding the meeting. We have found the fare excellent on these occasions, where good company, good wine, and good order prevail. We had a very interesting discussion at the Geological Society, based on a memoir which I read on the fossil remains of the immense extinct animal from Alabama, which I had described under the name of *Basilosaurus*,—the question to be determined being, whether or not this fossil belonged really to the Saurian or Mammiferous order. The strongest argument of its mammiferous nature, was derived from certain analogies which Mr. Owen discovered in his microscopical examinations of sections of the teeth of this fossil, and those of the *Dugoney*. For the detailed account of this discussion, I must refer you to the notice published in the Athenæum a few days subsequently, and to the forthcoming volume of the Transactions of the London Geological Society.

London is at present enlightened by hundreds of lecturers on all subjects. We listened to a very interesting clinical discourse to-day, by Sir Benjamin Brodie, at St. George's Hospital, on certain diseases of the bones.

Drs. Hall and Grainger are delivering admirable lectures on the nervous system, ably illustrated by comparative anatomy; and Dr. Grant's discourses on comparative anatomy, would in themselves compensate for a voyage across the Atlantic. We are to attend the Royal Geographical Society's meeting, on Wednesday, and to hear Professor Faraday lecture at the Royal Institution, on Friday evening next. On Sunday last, we again had the honour to meet at Mr. W. Lawrence's hospitable board, a very agreeable society of ladies and gentlemen.

Among the liberal dispensers of hospitality to scientific foreigners, and more particularly to their "*transatlantic brethren*,"—for this is the designation which, by common consent, is hereafter to be applied to our compatriots,—none surpass our enlightened friend, Mr. Lawrence; the high encomiums bestowed by this admirable writer on American institutions and our men of science, in his celebrated work, "*The Physiology and Natural History of Man*," together with the friendly disposition he has ever been so ready to show to members of our profession vi-

siting London, has long rendered his name particularly popular with us. I am aware that his unsurpassed professional fame, either as a writer, lecturer, or practitioner of surgery, can receive no addition from any encomiums in my power to express, but in thus casually alluding to the subject at all, I could not say less of one, to whose liberal hospitality myself and numerous friends have so often and so extensively been indebted. His merits, indeed, could be only adequately expressed, by stating that they are equalled by the brilliant success which has finally crowned his intellectual and professional exertions. I presume that his income is surpassed by very few of his European competitors. The trustees of the Royal College of Surgeons have displayed their discrimination, and, at the same time, conferred a well-merited compliment on Mr. Lawrence, in choosing him as the principal director of that magnificent and unrivalled anatomical and physiological cabinet, which has grown out of Hunter's museum, a colossal monument of British taste and of British munificence, contemplated with sentiments of pride and delight by every true votary of science, and which is admirably calculated to perpetuate the fame and hand down the name of its illustrious founder and enlightened directors to the latest posterity.

I have been examining, with great interest, at the College of Surgeons, a descriptive catalogue of the museum, preparing by Messrs. Clift and Owen; several volumes in quarto have already been published, they are illustrated with numerous plates, and would form a most valuable acquisition to our public libraries and scientific institutions. I hope you will recommend the purchase of a copy for the library of the Philadelphia Hospital. I presume there could be no difficulty in the American Philosophical Society and Academy of Natural Sciences of Philadelphia making an exchange, pro rata, for this invaluable contribution to physiology and anatomy.

In going the rounds, with Mr. Mayo, at the Middlesex Hospital, he showed us some cases of considerable interest; among them, cases of "Acute Ankylosis" of the knee-joint, distinguishable at first from common cases ending in ankylosis, in the inflammation and pain being unattended with swelling of the joint, and the disorganization and stiffness being completed in two or three months. Sir Benjamin Brodie has also noticed the same variety of disease, and I think both these surgeons have published their

experience in the recent number of the *Medico-Chirurgical Transactions*.

I had the pleasure of meeting Sir Benjamin Brodie, and twelve other eminent members of the profession, including Carswell, Grant, Sharpey, &c., at the house of Professor B. Phillips,—gentlemen, whose scientific acquirements are far from being limited to their own immediate professions. Sir B. B. considers it easy to distinguish scrofulous from syphilitic caries of the bones ab origine, by the latter affection being always preceded by evident symptoms of pain and inflammation; whilst the first indication of strumous caries, is a small, hard, indolent, osseous tumour in different parts of the frame, notably in the metatarsal and metacarpal bones; and even at this early period of the disease, it is already too late for the successful operation of any remedies; no means can prevent, sooner or later, suppuration of the neighbouring soft parts, and subsequent caries, which is not superficial, either, but is seated deep in the bone; hence Mr. B. says the disease must have originated in the medullary portion.

Saturday, January 19th.—Last evening we were delighted with Mr. Faraday's discourse, at the Royal Institution, on the physiology of the torpedo, gymnotics and silurus, as connected with electricity. He has recently been occupied in experimenting on a torpedo now living at the Gallery of Practical Science, Adelaide street. Mr. F. is a superlatively neat manipulator, and eloquent lecturer; he riveted the attention of a numerous and intellectual audience, including many distinguished foreigners, both of the scientific and diplomatic corps. We strike our tent, and embark for Havre to-morrow. I hope soon to communicate with you from Paris.

Respectfully, yours, etc.

R. HARLAN.

BIBLIOGRAPHICAL NOTICE.

An Inquiry into the Influence of Physical Causes upon the Moral Faculty. Delivered before a meeting of the American Philosophical Society, held at Philadelphia, on the 27th of February, 1786. By BENJAMIN RUSH, M. D. Philadelphia: Haswell, Barrington, and Haswell, 1839. pp. 28.

THIS Address, written fifty-three years since, is again introduced to the public, under the

auspices of Mr. George Combe, of Edinburgh,—now in our city, engaged in the delivery of a phrenological course,—whose object will be understood on the perusal of the subjoined well-written Introductory Notice:—

“In the numerous discussions which have arisen out of Dr. Gall’s discovery of the functions of the brain, many attempts have been made to show that his views were not original. The divisions of that organ into different compartments, and the location in these of different mental faculties, exhibited by various authors, from Aristotle down to John Baptista Porta who published in the seventeenth century, have been confidently referred to, as evidences that Dr. Gall’s doctrines are the mere revival of exploded theories. Dr. Gall himself has recorded the opinions and speculations of these authors, and pointed out that, while they located the faculties in different parts of the brain from fancy, he did so from observation. But the nearest approach to Dr. Gall’s discovery, which has come under my notice, is one that the opponents of Phrenology have not referred to. It is contained in ‘An Inquiry into the influence of Physical Causes upon the Moral Faculty,’ delivered by Dr. Benjamin Rush, before a meeting of the American Philosophical Society, held at Philadelphia, on the 27th of February, 1786, published by their request, and dedicated to Dr. Benjamin Franklin. In this Inquiry ‘coming discoveries’ may be said to have cast their shadows before; and Dr. Rush, by observing and faithfully recording the phenomena of nature, has brought to light several important truths which have since been confirmed and elucidated by Phrenology, in a manner that evinces, on his part, extraordinary depth and perspicuity of intellect, combined with the highest moral qualities. The ‘Moral Faculty’ mentioned in his ‘Inquiry,’ appears to me to comprehend nearly the three moral sentiments of Benevolence, Veneration, and Conscientiousness, treated of by Phrenologists, each of which is manifested by means of a particular organ, and is influenced by its condition of health or disease; and if the following pages be perused with this explanation in view, the close approximation of Dr. Rush’s remarks to the doctrines of Phrenology, will be easily recognised. In many details he differs from, and falls short of the views of Phrenologists; but in the general conclusion maintained by him, that physical causes influence the moral faculty, the coincidence is complete. I have not been able to find this ‘Inquiry’ printed separately from Dr. Rush’s general works; and as it will probably prove interesting to many persons who are not in possession of these volumes, I have been induced to present it in this form to the citizens of the United States. Although all the views contained in it may not have been supported by subsequent investigations, there is so much of sagacity in the author, and of truth in his conclusions, that America may be justly proud of the genius of her son.”

CLINICAL LECTURES.

PENNSYLVANIA HOSPITAL.

AFFECTIONS OF THE LACRYMAL DUCT.

Saturday, February 9th.—Dr. HARRIS introduced a patient affected with an obstruction of the lacrymal duct. Before proceeding to operate, he offered the following remarks:

It was at one time the practice, to call all affections of the lacrymal passages, *fistula lacrymalis*. There are various diseases located in the inner corner of the eye, distinct in character, and requiring different treatment.

Inflammation is often located in the cellular membrane, covering the lacrymal sac, while the sac itself is free from disease. It sometimes exhibits an erysipelatous form, and terminates in an unhealthy suppuration. In the progress of this disease, the sac may become secondarily affected.

In the treatment of this cellular inflammation, it is particularly important to produce resolution. General and local bleeding, with warm fomentations and aperients, are found most efficacious. When pus has formed, the abscess ought to be early opened, otherwise the lacrymal passages may become involved. When the sac does become so affected, then the treatment is the same as is found necessary in true *fistula lacrymalis*.

When the lacrymal sac is primarily inflamed, it enlarges, is circumscribed, and painful, more particularly if pressed. The tumour thus formed in the inner canthus of the eye is of a pale red, but, by degrees, assumes a darker colour, and is accompanied with a pain that often shoots into the orbit. The inflammation, if not arrested by appropriate means, extends to the ducts and puncta, thus obstructing them, and causing the tears to flow freely over the cheek.

When these symptoms have continued for a few days, the inflamed mucous lining of the sac secretes an abundant puriform matter. Pressure with the finger on the sac, will commonly cause the pus to flow through the puncta. When the ducts are entirely obstructed, then the swelling increases, its redness assumes a darker hue, and a yellowish, soft spot is seen, which indicates the approach of matter to the surface.

It is now the duty of the surgeon to lay open the abscess, in order to prevent fistulous openings. It is always most prudent to make an artificial opening, rather than to allow the abscess to burst spontaneously, as the matter burrows under the skin, and discharges through an aperture so narrow, that the tears alone escape, while the thicker contents remain behind. It is this condition of the parts, that constitutes true *fistula lacrymalis*.

It is not common that the opening in the integuments corresponds with the ulcerated point in the sac. On the contrary, we have generally a long sinuous passage, extending between the sac and orbicularis muscle. The puriform discharge flows through the orifices, becomes lim-

pid, rather than thick, and whitish. In some few instances the ducts re-open—the tears and mucous are transmitted through the nares, the fistulous openings heal, and a spontaneous cure is effected.

Fistula lacrymalis is sometimes a symptom of disease of the bones in the vicinity of the lacrymal passages. I have a case of this kind, now under my care, which has supervened from the injudicious use of mercury.

In the treatment of suppuration of the sac with epiphora, it is important to attend to the general health. Frequently the habit of the patient will be found weak and strumous. It is the case in the patient on whom I propose to operate this morning. You will observe that he is of a phlegmatic temperament, fair skin, tumid lips, and sandy hair. He had, when brought into this institution, poropthalmia, and diseased digestive organs. By a course of alterative treatment, his general health has improved, the disease of his eyelids has disappeared, and the suppuration of the sac has much diminished. The only local remedies used, have been the application of leeches, washing out the sac with astringent lotions, by means of Anel's syringe, and touching with diluted citrine ointment, the diseased margins of the eyelids. Such means will often cure the disease, and open the obstructed passages. They have not succeeded in this instance, and therefore an operation has become necessary. I have not used Anel's probe with the view of dilating the strictured duct, because I have little confidence in its utility. Though you may often pass the probe through the duct into the nose, it never sufficiently dilates the stricture, so as to produce a permanent cure. You might as well attempt to cure a stricture of the urethra with a pocket probe. No stricture can be properly cured, unless the tube is dilated fully to its natural dimensions. If, then, a cure cannot be accomplished by such means, it is better to open the sac early, and thus prevent more serious mischief.

In performing this operation, I use a straight and narrow bistoury, with a groove on its side. You feel for the firm ligament which attaches the orbicularis palpebrarum to the nasal process of the superior maxillary bone, just below which is located the upper orifice of the ductus ad nasem, and within the edge of the orbit. On this point, the knife is made to pass into the sac, pushed downwards, backwards, and a little forwards, in the direction of the duct. A probe should be now passed along the groove in the bistoury, until it is fairly lodged in the duct. Force is sometimes required to overcome the stricture, but if made in a proper direction, so as not to injure the covering membrane of the bone, or the bone itself, so harm can result.

When the operation is completed, a small quantity of blood and matter will issue from the corresponding nostril.

In order to secure a pervious state of the nasal

duct, various methods have been proposed. Of the inefficacy of Anel's probe passed through the puncta, I have already spoken. When thick flocculent matter, secreted by the sac, obstructs the duct, syringing the passages from the puncta has completely removed the disease. I have seen many examples of this kind. Inserting a curved probe under the turbinated bone, will often remove trifling obstructions, particularly if followed by injections through the same channel. This, however, is an operation requiring much tact, and which ought not to be attempted until the operator has repeatedly practised on the dead subject. The first attempt to introduce the instrument is always the most difficult, as the valvular projection of the membrane at the lower orifice forms a considerable obstruction. So soon as this valve is destroyed, subsequent introductions become more easy.

The preferable plan of treating this disease, is by opening the sac in the manner already indicated, and afterwards to use either tubes or styles. The tubes are constructed of either silver or gold, and of equal calibre throughout their whole extent. Notwithstanding the high recommendation of this instrument by Decypreter, its effects are often unsatisfactory and annoying. The tube frequently becomes obstructed by the concretion of the matter passing through it. To remove this obstruction is by no means easy. A free incision over the tube is rendered necessary, and, with a strong forceps, the instrument must be seized and drawn out, which is commonly a very painful operation. There are few surgeons who have had much experience with this instrument, who are not disposed to abandon its employment.

After some experience, I vastly prefer the style to the tube. They may be made of either gold, silver, pewter, or lead. After a probe is passed through the duct into the nose, it should be withdrawn, and a small style introduced in its place. The size should be gradually increased until it is of sufficient magnitude to correspond with the calibre of the duct in its natural and healthy condition.

The plan on which I propose to operate in this case is, to dilate the stricture with a silver probe, and after withdrawing it, to substitute a catgut bougie, and allow it to remain several days. The advantage of this instrument is, that by the absorption of moisture, it becomes flexible, un-irritating, and increases to double the size of it when first introduced. In this manner you fully dilate the duct, and afterwards introduce the leaden style, which produces less irritation than other metals. This leaden instrument should be worn until all irritation and suppuration entirely ceases. At this time, the style may be removed, the aperture in the integuments and over the sac closed, and thus will ensue the permeability of the canal.

[The patient now submitted to the operation already proposed.]

PHILADELPHIA HOSPITAL.

DISEASES OF THE EAR.—(CONTINUED.)

Saturday, February 9th.—At 10 o'clock, Dr. HORNER commenced:

GENTLEMEN,—In continuing the subject of diseases of the ear, I propose to-day to review briefly the various affections to which the organ of hearing is liable, and to enumerate the particular symptoms which characterize each form of aural disease, with an abstract of the treatment most generally approved in each case. These I shall illustrate, by introducing such specimens as the patients of the house may present. Following the classification mentioned at our last meeting, I shall commence with the diseases of the external ear, and first of *Erysipelatous Inflammation of the Auricle*.

We have here all the ordinary appearances of erysipelatous inflammation in other parts. The auricle becomes swollen, red, tense, shining, hard, and of a dark brown colour. The sensibility of the part is morbidly increased, and this frequently remains some time after a subsidence of the other appearances. Transparent vesicles, filled with serum, form, which end in yellow purulent points, or in scabs. Constitutional symptoms are developed, with gastric irritation and a foul, loaded tongue, and some febrile movement. These symptoms last for several days, and then abate. This disease is frequently a concomitant of erysipelas of the face, and its causes are exposure to the sun, stings of insects, wounds, applications of an irritating description, &c. The general and local treatment is the same as that of erysipelas of the face. I should think it worth while to try the application of a solution of the nitrate of silver, or a mixture of wheat flour and nitrate of silver to dust the part with.

Scirrhus degeneration of the auricle, and of the *meatus externus* resembles, in its incipient stage, erysipelas of the same parts, and is principally distinguished from it by its protracted duration. The ear becomes thin, nodulated, and misshapen. The pain is urgent, burning, and continued. It is rarely attended with fever, and ends in ichorous ulcerations, situated in the cutis vera. In the treatment, attention must be paid to cleansing the part repeatedly, and we must depend on alteratives, purging, and counter-irritation. The sulphur baths and Zittman's decoction will be found of service, as well as the use of the tartar emetic ointment, on the neck, below the mastoid process.

Furuncle of the auricle resembles a common boil, and is a hard circumscribed tumour, attended with severe pricking pains, redness and heat, ending in a purulent focus, and involving the cellular texture. Its seat is generally near the meatus, or in the scapha, or the cavitas innominata. Emollient poultices are to be applied till suppuration is established, and then the boil is to be freely opened. Should the disease be extensive and severe, a proportional degree of antiphlogistic treatment must be observed.

Erysipelatous inflammation attacks, also, the meatus. This is accompanied by pricking, burning, itching sensations, great sensitiveness to the touch, delusive noises, confusion of head, increase of temperature, impaired facility of hearing, the ear feeling full and stopped. The ceruminous secretion becomes increased and altered, and is of a brown colour, mixed with scales of cuticle, and adhering to the meatus. Blood frequently is discharged from the meatus. The development of this affection is generally sudden, though sometimes slow. In its treatment, we must have frequent recourse to injections of tepid water, to remove the accumulated ear-wax, which irritates the passage and augments the disease. An injection, consisting of a grain of the sugar of lead in an ounce of water, will also be found of service. When ulceration has commenced, the part must be brushed with tincture of myrrh or opium. The application of a solution of the nitrate of silver I would, also, recommend, as well as a mixture of the caustic with flour. If it be obstinate and tedious, counter-irritation beneath the mastoid process will, also, be advantageous.

The ear is subject to an affection of its glandular structure, commonly known as *Catarrhal inflammation of the Meatus Auditorius externus*. In this affection the meatus becomes swollen, its calibre is diminished, and sometimes it is entirely closed. The texture is variable, sometimes being firm and sometimes spongy, with serous or purulent vesicles. It is red, hot, and a burning, itching pain extends over the whole ear, mastoid process, and parotid gland, and it is particularly sensitive to the touch. A serous, muco-purulent, or bloody secretion, of an ammoniacal odour, is discharged; the auricle sometimes is involved. This disease is apt to be followed by granulations, which are of two kinds,—vascular, spongy, sensitive; or cartilaginous and insensate. It lasts for weeks, and, indeed, years, though, according to Kramer, it never penetrates to the bone, or induces true inflammation, or destroys the membrana tympani, although the latter has an inflammatory redness. It is produced by cold, irritating substances, foreign bodies in the meatus, and cutaneous affections. In the Children's Asylum, connected with this institution, the inmates are very liable to purulent ophthalmia, and have very frequently this as an attendant, as you will presently see. The cuticular lining of the meatus and of the membrana tympani is most frequently detached, by the disease lasting a few weeks. In the early stages, depletory treatment and antiphlogistic measures are to be employed. The passage is to be kept clean by frequent aqueous injections, which are to be warm or cold, according to the sensations of the patient. Antimonials may be administered internally, and if there be much plethora, active purging several times a week, with spare diet. In a more advanced stage, a solution of the acetate of lead, (ten grains to an ounce of water,) or of the sulphate of copper or zinc, or of the nitrate of silver may be employed. The sugar

of lead water will be found best suited for correcting the ammoniacal odour of the discharge. Kreosote, pyroligneous acid, the chlorides of lime and soda, have, also, been recommended. Tartar emetic pustulation on the neck will frequently be serviceable.

This disease is commonly designated *otorrhea*, in consequence of the discharge from the ear, which may sometimes be an inconsiderable quantity of serum, scarcely attracting attention, and in other cases, again, is so copious as to soil several cloths daily with a sero-purulent fluid.

When polypous granulations arise, all emollient and oleo-mucilaginous applications are to be repudiated. Kramer prefers the use of a sponge compress. If the polypi be very large, they may be removed by the ligature, or by excision, or by touching them with the solid lunar caustic. When in a chronic indurated state and near the membrana tympani, they are cured with much difficulty.

Insects may be removed, by filling the meatus with olive oil, and foreign bodies are to be extracted by the forceps or probe.

[Several cases of this disease, in children, were introduced and commented on.]

Inflammation of the cellular tissue of the meatus, or *phlegmonous inflammation*, is marked by swelling and tension. There is an elevated spot, the size of a pea, generally in front, and resembling a common boil. Sensitiveness is extreme, the pain severe, and there is considerable dullness of hearing, with delusive noises. The patient has fever, and frequently hemicrania. The little tumour, at from three to seven days, breaks, and discharges a bloody pus. The invariable termination of this disease is suppuration. The remedies, of course, are such as will hasten this process—emollient applications, &c. Purg- ing is sometimes necessary, and the patient must be kept on low diet.

Inflammation of the periosteum of the meatus auditorius is characterized by a circumscribed swelling deep in the canal, unaccompanied with much pain; which opens, and discharges a thin, fœtid, filthy pus. On exploring the auditory passage with a probe, an exposed and carious bony surface is detected. The progress of this affection is slow; it arises sometimes from scrofula, or the metastasis of exanthematous diseases, as measles, scarlatina, and small-pox. Kramer regards the prognosis as unfavourable, when such are its causes. The topical treatment consists in ablutions of tepid water, and an avoidance of any irritating applications. If it be the result of constitutional disorders, our attention must be directed to the treatment of these.

If obliteration of the meatus occurs, it must be opened with a trocar. Kramer states that none of his patients had sufficient patience to await the period of cure, so that he does not report any complete cases.

The next disease of the ear to which I shall call your attention, is *Acute Inflammation of the Membrana Tympani*. The patient suffers from acute, tearing, dragging pains at the bottom of

the meatus, and experiences the sensation of an insect in the canal. The hearing is imperfect and painful, with constant susurrus or tinnitus. On examining the membrane of the tympanum, it will be found swollen, protuberant, and of a blood-red color. General symptoms, as fever, restlessness, &c., commonly attend this complaint. The discharge from the ear is generally watery, purulent, or mixed. It terminates either in ulceration or thickening and opacity of the membrana tympani, and sometimes in a cartilaginous degeneration. Cold and acrid applications are its common causes, and, according to the observations of Mr. Kramer, never an accumulation of ear-wax. Its duration is from a few days to some months. Antiphlogistic treatment and regimen must be employed, as leeches, saline purges, &c. The best local application during the acute stage, is warm, sweet wine. After the acute inflammatory stage has passed, injections of a solution of the acetate of lead are of service, but care must be taken not to use them too soon, or they will favour the thickening of the membrane. Counter-irritation, with the tartar emetic ointment, will be found useful. Mr. Kramer believes that a hole in the membrane of the tympanum is always a consequence of preceding inflammation, and that the facility of hearing is always impaired by it. He rejects entirely the idea of relaxation or preternatural tension of the tympanal membrane.

The membrana tympani should only be perforated when a cartilaginous degeneration is fully ascertained. The success of this operation depends on the permanence of the opening, and a small, circular piece of the membrane should be removed by a gentle rotatory motion of Himley's punch. Should a purulent discharge follow the puncture, we may conclude that disease of the middle ear exists, and no benefit will accrue.

The membrane of the tympanum is also liable to *chronic inflammation*, and when in this state, on examination we find it thickened, uneven, swollen, opaque, red, and sometimes ligamentous or cartilaginous. It is sometimes ulcerated, and sometimes granulations spring up from it. The sensibility varies,—being, in some cases, not beyond the natural standard, and in others, considerably exalted. There is tinnitus, with dullness of hearing, and a serous or muco-purulent discharge, which is unsettled in quantity, and sometimes concretes in crusts. The ceruminous secretion is suspended. The disease is insidious in its onset, and may last for years and even during life. The prognosis is, in general, unfavourable, although amelioration does sometimes take place. The treatment is pretty nearly the same as that previously detailed. The factor of the discharge may be corrected by the acetate of lead, in solution. This affection commonly terminates in perforation of the membrana tympani.

I shall now proceed to the consideration of the diseases of the middle ear, under which head, I shall treat of the affections of the cavity of the tympanum and Eustachian tube, offering to you an abstract of the symptoms and general treat-

ment; my time not allowing me to enter more fully into the subject at this time.

In inflammation of the *mucous membrane* of the middle ear with accumulation of mucus, there is a fulness and weight in the part, accompanied with little or no pain, and some dulness of hearing, as if a veil were thrown over the ear. There are sometimes tinnitus and a crackling sensation in the ear, although both may be wanting. Audition, in some cases, is improved by warm weather, exercise or clearing the throat, and diminished by cold, dampness, catarrh, the depressing passions; though in others, again, these appear to exercise no influence. Inflammation of the mucous membrane of the tympanal cavity is frequently complicated with chronic inflammation of the throat, palate and tonsils, and is accompanied with a stuffing in the head, an abundant secretion from the mouth and nose, and sometimes by a relaxed pendulous uvula. It is a disease commonly of early life. The general treatment found most beneficial is a dry strong diet, the use of Zittman's decoction, free purging, iodine. The local treatment consists in leeches, cold ablutions to neck, face and throat, to be followed by dry frictions, and counter-irritation. The introduction of a current of air, or the injection of water, with a little common salt dissolved in it, is a favourite remedy; the Eustachian tube being used for the purpose. The sign of a free passage and unobstructed state of the Eustachian tube, is, that the air, on applying your ear to the patient's, is heard to pass into the tympanum, by an uniform, broad, rushing current. It appears to strike the membrana tympani, and issue from the meatus of the patient. When the tube is obstructed with mucus, there is a gurgling, interrupted sound, which is, also, fine, shrill, and somewhat like a squeak. If the dulness of hearing depend simply on an obstruction of mucus in the tympanum and the tube, there is always an immediate improvement after the air-douche, though the patient may relapse again in a short time, until the pathological condition of the mucous membrane is removed. The complete cure of the mucous membrane is ascertained by the enduring improvement in audition, and also by the broad, free sound having taken the place uniformly of the gurgling one. If, after four trials with the air-douche, no sound is heard in the tympanum, it may be considered that the Eustachian tube is strictured or even obliterated. If strictured, it must be dilated with a catgut bougie; if obliterated, treatment will be unavailing. The graduated sizes of the catgut, are harp E, guitar E, violin E, guitar A, violin A, Harp A.

Inflammation of the Eustachian tube, with stricture, is characterized by great dulness of hearing and ideal noises, though the latter are not invariably present. Chronic inflammation and thickening of the fauces and palate, always attend this affection. It is impossible to inject air or water, and on attempting to pass the catgut bougie through the tube, on reaching the stric-

tured point, it is arrested. The prognosis is unfavourable.

The same symptoms as those just detailed exist in inflammation with tumefaction of the Eustachian tube, except that the bougie can be passed into the tympanal cavity. This disease is attended with a collection of mucus in the tympanum. The prognosis is, likewise, rather unfavourable. The treatment, in both disorders, consists in leeches, purges, emetics and iodine, light diet and the passage of catgut bougies. A revulsion with tartar emetic ointment is also indicated.

Obliteration of the Eustachian tube is known by excessive dulness of hearing, and the impossibility of passing the bougie. It is considered incurable by Kramer, who rejects absolutely the idea of Saissy, to open it with a stilet; and of Perrin, to cauterize it through with Perrin's instrument.

The next affection of the ear I shall speak of is *Acute Inflammation of the Cellular Tissue* and of the *Periosteum of the Tympanum*, which is characterized by severe burning pain, extending to the pharynx, and to the side of the head. The audition is either dull or very much excited, confused, and attended with ideal sounds. The membrana tympani is inflamed and sensitive. The Eustachian tube is also sensitive to the touch. Pain is experienced on any motion of the jaw, or sneezing, and invades, finally, the entire side of the head. The eye of the same side is very red, weeping, and sensitive to light. No alteration occurs in the meatus commonly. There are redness and tumefaction over the mastoid, which finally end in suppuration. The epiphenomena are fever, with alternations of chilliness and heat, which are severe in the evening and remit in the morning. In the worst cases, the pain and the constitutional disturbance are so great, that there is a raging delirium; hard, quick pulse, great heat of skin, urgent thirst, constipation, high-colored urine, vertigo, loss of appetite, and vomiting. This state lasts for a few days, when the patient suddenly dies, apoplectic; or under the most exasperated symptoms of phrenitis. It is particularly insidious in children, because, from their want of definite words, the disease advances into the stage when the cerebral symptoms are most prominent, without an affection of the ear being suspected. Some intimation of its implication is commonly given by their carrying their hand frequently to the part. Under ordinary circumstances, this disease may last from a few days to months. The symptoms are exasperated from day to day, until a purulent, bloody fluid finally bursts through the meatus externus, bringing away with it fragments of the temporal bone and the ossicula auditus. A livid red colour over the mastoid process is not unfrequently a sure guide to this affection, and where suppuration is established in it, a probe can be carried down to the bone.

The same disease may exist in a chronic form, and the symptoms are nearly the same. On the dissection of cases of both acute and chronic

inflammation of these parts, pus is found in the cavity of the tympanum, in the labyrinth, and in the cells of the mastoid process. The dura mater, in the region of the temporal bone is found detached, discoloured and suppurating, and the arachnoid membrane is sometimes involved. The most energetic antiphlogistic treatment is demanded. I shall here read you a case of this disease which terminated favourably, and which I attended in consultation with Dr. Pancoast. He having allowed me the use of his journal of the case, I have, through his kindness, formed from it this abstract.

May 23d, 1828.—Eliza McElroy, aged 20, a domestic, of sanguineo-nervous temperament, has, during her whole life, been subject to ear-ache, frequently repeated, and attended with discharges from the meatus. Several sisters have been afflicted likewise.

For the last six months every exposure to cold, though trifling, has produced severe pain in the right ear, and a less degree of it in the left. She now has fever, and general uneasiness, in addition to the ordinary sensibility of her ear. She was relieved by bleeding, a cathartic, and avoiding exposure.

May 26th, 1828.—Slight and incessant pain in the right ear. The next day she had pain in both ears—that of the right being excessive, and attended with a small discharge of bloody serum, and some fever. Up to the 30th, there was no material change. The bloody serum then came away in large quantity, and brought with it small fragments of bone. A slight discharge from left ear.

The next day the symptoms continuing, to them were added a convulsive drawing of the right eye upwards, and a vomiting of every thing. The day after, there was soreness over the mastoid process of the right side. Hearing perfect in each ear, and the left ceased to be troublesome.

Up to the 5th of June, some improvement,—a hole, which had been seen on the 31st ult. in the membrana tympani, was now much enlarged.

June 12th, 13th.—A decided relapse; increase of pain, of discharge, and of fever; discharges of bone; tenderness behind right ear. On the 18th she had delirium, which continued with some intermission to the 24th. On the 25th delirium returned, with stridulous breathing, and occasional spasms; throat inflamed.

June 26th.—Short but violent spasms of the glottis, and of frequent recurrence. Frequent discharges of sero-sanguineous fluid into the pharynx, each preceded by much difficulty in breathing: the next day it was discharged through both mouth and nostrils, and rendered the breath foetid.

In the interval to July 6th, she had discharged several large pieces of bone, both through the pharynx and the meatus externus. A loose bone was then felt by the patient to move about considerably, as the posture of the head changed. The last evening a total blindness of both eyes supervened—the first to be attacked, and the last

to recover, being the right. This attack was preceded by intense pain, partial loss of hearing in left ear, that of the right remaining perfect.

In the afternoon of the 7th of July, agonizing pain in the head, like the passing of a waggon wheel over it; it was quickly followed by perfect blindness on both sides, with partial loss of smell and taste. The vision returned in a few minutes, but she became perfectly deaf, with excessive palpitations of the heart, dyspnoea, and epigastric uneasiness, excessive itching in skin of upper part of the face and in the nostrils, clammy and itching sensation in lining of mouth—coldness felt in the throat.

The next day she was more comfortable, with perfect hearing in both ears,—with vision, taste, and smell, not much impaired. The symptoms continued, with alternations for the better or worse, till the 10th, when she had several severe and universal spasms: They were preceded by severe pain, with heat in the occipital region. From this period to the 18th, there were various attacks of spasm, partial or universal, abolition and restoration of the senses, inability to open the mouth, pain, dyspnoea, prickling sensation in her right arm and leg in the course of the nerves, want of motion in the limbs.

The patient had convalesced so far by the 6th day of August, as to be able to go into the country. I saw her twice during her illness, in consultation with Dr. Pancoast; and Dr. Jackson, during an absence of Dr. P. from the city, had her under charge from June 28th to July 4th.

I have omitted Dr. P.'s details of treatment, but they were very judicious, being of an active, antiphlogistic kind, attended occasionally with blisters and sinapisms.

February 4th, 1839.—She is now in good health, and hears on both sides. On weighing the fragments of bone, they amount to 3ij. in the dried state, and number thirty-six, great and small. They vary from the size of a grain of wheat, to that of the end of the finger, and are principally of the cellular structure—some few of the pieces being smooth on the surface, exhibit thereby the plate next to the dura mater, and portions of the foramina of the contiguous part of the skull. They seem to be from the petrous, mastoid, and occipital bone, though the fragments are too irregular to determine the precise portions.

In this box I exhibit to you the collection of bony fragments, as preserved by Dr. Pancoast, it is almost incredible that such destruction should have occurred, and the patient survive it. No one, to have seen her in one of her paroxysms of frantic delirium, would have anticipated such a result.

I shall now pass to the consideration of the diseases which assail the internal ear. A disease of this part can only be rigidly inferred, when we have ascertained by the speculum and lantern, that there is no affection of the meatus externus, or membrana tympani; likewise by insufflation and the catgut bougie, that the Eustachian tube and tympanum are free from disease. An impaired function of the labyrinth appears

under two forms. 1. An augmented irritability—erythismus. 2. Diminished irritability—torpor. Tinnitus is an essential sign, being present in the first, and absent in the last.

In *Erethitic nervous deafness*, there are constant ideal noises, as buzzing, the sound of wind, rain on trees or houses, roaring of the sea, afterwards becoming like the chirping of birds, whistling, or a kettle of boiling water. These delusive sensations are increased by violent exertions, and by excitements. The dulness of audition is increased by bad weather, and finally it becomes almost obliterated. Hearing is facilitated for the time, by the rattling of carts, or any heavy jarring noises, as a peal of bells, or the beating of a drum. It is rendered more imperfect by brazen instruments of music. A loud shrill voice is insupportable; the opposite is sometimes pleasant. The disease having advanced to its acme, perfect deafness then follows, and the tinnitus finally ceases. Acuteness of vision in distinguishing the motion of the lips of a speaker, is sometimes mistaken by the patient for improved hearing. By insufflation with the air-douche, the hearing is made worse, the head confused, and the ear feels stuffed. A gradual diminution in the cerumen occurs, though this is not an invariable occurrence. The meatus is dry, scaly, and insensible. The auricle is in the same state. The treatment is the introduction of the vapour of acetic ether, very gradually into the middle ear through the Eustachian tube, according to the method described in the last lecture, and the effect on the hearing is to be cautiously observed and noted.

I shall conclude with a few words on the *Torpid form of nervous deafness*. Here there is a gradual and total privation of audition, with a suspension of the sensibility of the meatus and auricle, and of the ceruminous secretion. As I before mentioned, there is no tinnitus. The membrana tympani is opaque, like white paper. The Eustachian tube and meatus externus are generally open, but if they be obstructed, no relief can be anticipated. When a strong watch cannot be heard, the prognosis is unfavourable. The only treatment which is entitled to any confidence, is the introduction of the vapour of strong warm acetic ether, as in the erithitic form, into the Eustachian tube.

The treatment of nervous deafness, should be continued for at least three months, and the longer the better. Tinnitus is no proof of nervous deafness, as it attends all aural diseases, any more than it is indicative of sanguineous congestion in the head.

The case which I shall now narrate, shows the improvement in the power of hearing, under the influence of a stream of ethereal vapour, continued almost daily for some time. I first used sulphuric ether, and then acetic ether. My condenser, holding a quart, was filled with a second atmosphere of air, impregnated with the ether, by passing the air through the ether, and the stream of medicated air was then let into the Eustachian tube. Each ear received generally

at a sitting, two douches, prepared in that way, or half a gallon of medicated air.

Nervous Deafness from Infancy, attended with some obstruction of the Eustachian Tube from Mucus.

Mr. C., æt. 21. June, 1838.

9th.—Hearing distance with my watch on right side, 18 inches; ditto, left side, 12 ditto.

11th.—Hearing distance with my watch on right side, 20 inches; ditto, left side, 17 ditto. On each side hears two inches more after injection of vapour of sulph. æth. Clear, hot day.

12th.—Clear, hot day; treatment repeated. Hears 21 inches on right side, 23 on left side, before injection; considerable tumefaction in region of parotid gland, on left side, from emphysema.

13th.—Did nothing.

14th.—Tumefaction diminished. Hearing distance on both sides, 2 feet 6 inches; distended with 1 quart on left side, 2 quarts on right, of vapour acet. æther; hearing distance increased on right side, to 3 feet; on left, to 2 feet 9 inches.

15th.—Audition same, repeated process.

16th.—Ditto, ditto.

17th.—No injection; dose of Epsom salts.

18th.—Hearing distance on right side, 3 feet; ditto, on left side, 2 feet 9 inches; at end of douche, 3 feet 3 inches on right side; ditto, 3 feet on left side.

19th.—Hearing distance on right side, 3 feet 6 inches; ditto, on left side, 3 feet 3 inches. After the ethereal air-douche, hearing increased on right side, to 3 feet 9 inches; ditto, on left side, 3 feet 6 inches.

20th.—Ditto, ditto.

21st.—Ditto, right side, 4 feet; ditto, left side, 3 feet 6 inches. After douche, ditto, right side, 4 feet 6 inches; ditto, left side, 4 feet.

22d.—Ditto, as after douche of yesterday.

23d.—Ditto, as before douche. After ditto, on right side, 5 feet; ditto, on left side, 4 feet 3 inches.

24th.—Nothing done.

25th.—Before douche, hearing as last report. Gave douche in each of fumes of acet. æther. Hearing distance, on each side, near 6 feet.

26th.—Before douche, hearing distance in each ear, 7 feet.

27th.—So much noise in street, no test would answer.

28th.—Before douche, 7 feet on each side.

29th.—Ditto, 9 feet ditto.

July 1st.—Ditto, streets very noiseless; 13 do.

July 6th.—Repeated douche of acetic æther, each day, till present, inclusive. Hearing distance, on right side, 13 feet; ditto, on left side, 14 feet.

Feb. 17th, 1839.—By a letter received this month from the gentleman in question, it appears that he hears as well as when the treatment was suspended. In his communication, however, he expresses himself uncertainly in regard to his power of audition generally, and seems anxious to renew the treatment. Cold, he says, affects his hearing very much.

[During the lecture, several patients were introduced, labouring under various diseases of the ear, and their cases explained and operated on; but we have preferred presenting an uninterrupted line of the lecture, believing that it would, in this way, be more useful and acceptable.]

THE MEDICAL EXAMINER.

PHILADELPHIA, FEB. 23, 1839.

We observe by the last French journals, that Prof. Andral will succeed Broussais in the chair of General Pathology and Therapeutics. Broussais was never able to give the subject its full developement. His mind had been so long directed towards a particular class of facts, that it had acquired a bias, which unfitted him for a department in which the instructor must assume the widest range consistent with sound philosophy.

Dr. Andral unites many qualifications. He has great familiarity with the phenomena of disease, and an extensive acquaintance with medical literature in general, while his mind is of that high order, which can take hold of a subject and view it in all its relations, by rapidly seizing a few prominent characters. We rejoice that the chair of this department of science will be so ably supplied,—its influence will certainly be widely felt, extending to all the branches of medical instruction; but, in unskilful hands, nothing can be more utterly insignificant than the chair of General Pathology.

On Wednesday evening, the 20th inst., Dr. RANDOLPH read before the Medical Society, the memoir of the late Dr. Physick, prepared in compliance with the request of the society. It was listened to with great pleasure by a very numerous and respectable body of physicians; and we have the satisfaction to say, that a copy has been furnished the society for publication. As might have been anticipated, Dr. Randolph has presented to the profession, a faithful and most interesting picture of the life and professional career of the Father of American Surgery. We promise ourselves the pleasure of offering our readers an extended notice of the memoir when published.

FOREIGN SUMMARY.

A case of Carditis. By THOS. SALTER, Esq.—The author begins by observing upon the extreme rarity of cases of genuine carditis, or inflammation of the muscular substance of the heart, a fact of which the older pathologists, who

confounded this affection with pericarditis, do not seem to have been aware. "It does not appear," says the author, "that Corvisart or Laennec ever saw an unmixed case of carditis, nor does Andral give a single instance of the disease." The clearest case of the disease that has ever, in his opinion, been published, is that related by Mr. Stanley, in the seventh volume of the Society's Transactions; and even that presented unequivocal evidence of the co-existence of inflammation of the pericardium.

The patient whose case forms the subject of the present narrative, came under the author's observation eight days before he died, at which time he complained of uneasy sensations in the region of the stomach, and under the sternum, increased by exertion. On applying the ear to the region of the heart, nothing abnormal was discovered. The patient stated that he had first observed the symptoms six weeks before, whilst walking; that the pain was then at the lower part of the chest, inclining to the left side, and that although it did not continue long, it was remarkably severe. A week afterwards he had a similar attack following exertion. The attacks then became more frequent, and even lifting the arm sometimes gave rise to them.

When the author saw him, he was sitting up in bed, being unable to lie down, owing to the great distress in his breathing. He indicated the middle of the sternum as the seat of the pain, which was not lancinating, but of a dull, heavy description. The treatment adopted, including venesection, counter-irritation, and the administration of opium and calomel, failed to procure any alleviation of the symptoms, under which he sank; retaining, however, his mind in a collected state during the entire period of his illness.*

On dissection, the vessels on the bag of the pericardium were distended with red blood. Its reflected layer, especially that covering the left ventricle, also evinced the existence of inflammation which had proceeded to the greatest extent in the part of the membrane attached to the diaphragm, which presented ecchymosed spots resembling purpura hæmorrhagica. The substance of the heart was moderately firm; that forming the left ventricle had almost entirely lost its muscular colour, and pus could be scraped from its cut surfaces. In some parts there were small cavities in the muscular substance, containing pus.—*Lon. Med. Gaz. Jan. 19.*

Researches on the nature and origin of Pus, its action on the blood, and the distinctive characters between Pus and Mucus. By M. MANDL.

[Translated for the Medical Examiner, from L'Experience, January 3, 1839.]

My object is not to point out the difference between the pus of an abscess and the mucus of

* In Mr. Stanley's case, alluded to above, so entire was the absence of all symptoms referable to the heart, that it was only by dissection ascertained that the patient did not die of disease of the brain.—*Secretary, Med. Chir. Soc.*

the sputa,—it is unnecessary to call to our aid either chemistry or the microscope, when the naked eye alone can decide the question,—thus, we shall not describe the properties of these secretions. But the question is, can we infallibly distinguish mucus from pus, that is to say, from that secretion which is consequent to a wound or a change of texture in a secretory surface? We acknowledge the difficulty we have found in arriving at the desired result. The globules of pus differ in nothing from those of mucus, except in the abundance of globules in the former and the presence of detached epithelium in the latter. Thus, for example, the vaginal mucus is composed almost entirely of shreds of epithelium, as has been remarked by M. Donné, and the globules in it are very few, though the slightest irritation of the vagina causes them to appear. We see in the mucus of the mouth, and especially on the tongue, hardly any thing but the particles of epithelium, constantly renewed by the buccal secretion; but the least catarrh, or the slightest irritation of the digestive passages, produces an increased secretion in the above mentioned parts, and the mucus becomes loaded with globules. The same fact holds true with regard to the sputa, whether suppuration in the lungs may or may not exist,—only in the first case the diffuent tubercular mass produces very small molecules, resembling in all respects the albuminous flocculi usually found in mucous sputa. The microscope confirms, then, what chemistry had already discovered; that is to say, that there is no essential difference in the elementary parts of these secretions. We will endeavour to explain in the following section, the causes of this identity, by showing what we conceive to be the process of secretion.

We have already shown that the globules of pus and those of mucus possess the chemical properties of fibrin. We have seen that the false membranes show a perfectly globular structure. If the secretion from a blister be collected, a matter is seen to coagulate spontaneously, and form a clot in the centre of the liquid. Now, this matter, which we call fibrin, on account of its spontaneous coagulation and insolubility by heat, is composed of globules precisely similar to those of pus. If blood, flowing from a vein, be mingled with the white of an egg, which contains no globules except a few rare molecules, and is agitated with a rod to separate the fibrin, this last is obtained in very soft and easily separated shreds. These particles, examined by the microscope, are composed of the most perfect purulent globules. The fibrin separated from pure blood which has been agitated, proves too compact a mass to be successfully examined by the microscope. Let us recollect, now, what we have said concerning the white mamellated globules we have noticed in the blood. They are, in all respects, similar to the purulent globules, and possess the same chemical properties, so that by a single microscopic observation we cannot decide whether the blood is pure or mingled with pus, for little globules are met with in the purest

blood. They have the same form in the different classes of animals, as well as the globules of pus; they do not exist in the circulation; they are found only in blood examined in the object-glass, or in the vessels after death. The blood in the dead subject is found full of these globules, principally in those parts where there has been no formation of clots. Now, all these reasons induce us to conclude, that these globules are the elementary parts of the fibrin which is coagulated; and when these elementary parts in this case are separated, they do not form a coherent mass. This mass contains a very great number of united globules, which cover each other, so that their forms cannot be distinguished, as it happens in the clot of blood.

Now, we say that the globules of pus and of mucus are identical with the white fibrinous globules of the blood. But how shall we account for the origin of the purulent and mucous particles? This is the explanation which our experience has confirmed. The blood, during its circulation, contains the fibrin dissolved in serum. According to the laws of endosmosis and exosmosis, a part of the serum must pass through the walls of the vessels,—the serum, once out of the circulation, leaves the fibrin to coagulate, which it does in its elementary parts, in globules. We have, then, no need of a peculiar membrane for the formation of pus; and we understand why pus and mucus contain all the constituents of the blood, except its colouring matter, which, existing in the globules, cannot pass through the walls of the vessels;—we understand, also, how that, by a longer or shorter retention in the secretory organs, the serum of these different secretions may undergo different changes. By these secretions the fibrin is constantly suffering a loss; and we may infer from the number of globules, that the loss is still greater during suppuration. The experiments we are about to show, may serve to dissipate all doubts on this subject.

If the experiments performed by Müller be repeated,—which consisted in filtering the blood of frogs,—a liquor will be seen to pass through the paper, which, collected on a watch glass, will very readily show small clots floating on its surface. Now, these little fibrinous flocculi, examined with care, are composed of globules, resembling, in all respects, the globules of pus and mucus. Very moderate compression of the particles destroys their elementary composition, and reduces the whole to a shapeless mass. Here, then, we have fibrin composed of globules, obtained by filtering, directly from the blood; now, these globules could not have existed before the coagulation of the fibrin; that is to say, before the serum of the blood had passed through the filtering paper. If it is wished to filter pus through the same paper, whether it be left to itself, or diluted with water to facilitate its filtration, the large globules of pus do not pass. But the globules of fibrin of the same size as those of pus, being found in the filtered liquid, must necessarily be a product of coagulation; for, if

they had pre-existed, they would not have been more able to pass than those of pus.

These simple experiments appear to us to confirm satisfactorily our ideas as to the origin of pus and mucus.

University College of London.—Dr. Elliotson, known formerly as a lecturer, and who has lately acquired not very desirable notoriety for his connection with Animal Magnetism, has resigned the chair of theory and practice, and Dr. Copland, an able writer, has been appointed in his stead.

Extract from a Lecture on the Nervous System. By MARSHALL HALL, M. D., January, 1839.—Let me now call your attention to the true spinal, or excito-motory system. I shall, in the first instance, confine myself to a detail of experiments; and I think I may therefore assert that what I shall state may be considered as physiologically demonstrated.

If, the head of an animal being removed, you irritate the spinal marrow, those muscles which receive nerves from *below* the point so irritated, are *excited* into a state of contraction. If, instead of irritating the spinal marrow, you irritate a muscular nerve in its course, the muscle or muscles to which this nerve is distributed, are, in like manner, excited into contraction.

Haller, who specially treated of this subject, denominated the power in the nervous system, which is thus called into activity, the *vis nervosa*;^{*} the power of contraction in the muscular fibre, he termed its irritability, or the *vis insita*. Of the former, he observes, "Irritato nervo, convulsio in musculo oritur, qui ab eo nervo ramos habet. Irritato vero nervo, multis musculis communi, totive artui, omnes ii musculi convelluntur, qui ab eo nervo nervos habent, *sub* sede irritationis ortos. Denique medulla spinali, irritata, omnes artus convelluntur, qui *infra* eam sedem nervos accipiunt; neque contra-artus, qui *supra* sedem irritationis ponuntur." Haller concludes, "Conditio illa in nervo, quæ motum in musculis eiet, *desuper* advenit, sive a cerebro et medulla spinali, *deorsum*, versus extremos nervorum fines propagatur." And "Ut adpareat causam motus a trunco nervi in ramos, non a ramis in truncum venire."[†] It was a mistake, as M. Flourens has shown, to suppose that this power exists in the *cerebrum*.

This same power is more correctly denominated by Professor Müller, the motorische kraft, or the *vis motoria*. This equally celebrated phy-

siologist treats this subject still more at length, and has laid down the following laws in regard to the mode of action of the motor power:—

"1. The motor power acts only in the direction of the primitive nervous fibres going to muscles, or in the direction of the branches of the nerves; and *never backwards*.

"2. The mechanical or galvanic irritation of a part of a nervous trunk does not excite the motor power of the whole nerve, but only of the isolated part.

"3. A spinal nerve which passes into a plexus, and assists, with other spinal nerves, in the formation of a large nervous trunk, does not impart its motor power to the whole of that trunk, but only to the fibres which it affords in its course from that trunk to the branches.

"4. All nervous fibres act in an isolated manner, from the trunk of a nerve to its ultimate branches."^{*}

M. Flourens denominates this power the "*excitabilité*," and he has shown more distinctly than any preceding physiologist, that it exists in the whole of the medulla oblongata and medulla spinalis, inclusive of the tubercula quadrigemina, but exclusive of the cerebrum and cerebellum; and, of course in the muscular nerves.

These statements convey a true view of the condition of our knowledge on this subject when I first began my researches. The *anatomical limits* and the *course of action* of this motor power were understood to be those which I have thus stated from these celebrated physiologists.

That this statement is true, in reference to the subject of my researches, I am enabled to prove, by detailing an unsuccessful experiment made by Professor Müller.

"I wished," says Professor Müller, "to ascertain whether the last of the spinal nerves, if they were divided at some distance from the spinal marrow, and galvanised, (their roots being still attached to this organ,) would excite convulsive movements in the *anterior* parts, through the medium of the spinal marrow. The results were constant but unexpected.

"Neither the anterior nor the posterior roots occasion, when they alone are acted upon by galvanism, retrograde action into the anterior parts of the animal frame, as of the head. It seems, therefore," adds Professor Müller, "that the fibres of the nerves do not communicate in the spinal marrow."[†]

Allow me, now, to call your attention to a series of experiments of my own. If, in a turtle, its head having been previously removed, we carefully lay bare the intercostal nerves, and pass across them the galvanic influence, we immediately induce movement in *all* the extremities, the *anterior* and the *posterior*. If we choose a nerve near the anterior extremities, these are most

^{*} Some writers having been misled, by this expression, to think there is a similarity in the views of Prochaska and my own, I must caution you that this *vis nervosa* of Haller is *not* the *vis nervosa* of Prochaska. I can scarcely tell you *what* the *vis nervosa* of Prochaska is, unless, indeed, it be *every thing*. It is something which is *augmented in mania* and in *gout*.

[†] *Elementa Physiologiæ*, t. iv. p. 525.

^{*} *Handbuch der Physiologie*, i. 656; and Dr. Baly's Translation, i. p. 680.

[†] *Handbuch der Physiologie*, 1833, t. i. p. 632; Translation, p. 645.

moved; if near the posterior, these, in their turn, are most affected. This experiment, as you will perceive shortly, forms the *basis* of the system of incident, excitor, motor, or excito-motory nerves.

That the source or principle of action in this experiment is identical with that already noticed, as acting in the spinal marrow and in the muscular nerves, is proved by an intermediate experiment. If, in a decapitated turtle, instead of laying bare the intercostal nerve, we denude the spinal marrow, and pass the galvanic influence across its substance, we also excite contractions in the *anterior* as well as the posterior extremities.*

We have thus traced the influence of the "*vis nervosa*," of Haller, the "*vis motoria*," the "*excitabilité*," in a retrograde direction in the spinal marrow itself, and in an incident and retrograde direction in the intercostal nerves and the spinal marrow.

In this latter case we have, I think, a new kind of action, and, physiologically speaking, a new kind of nerve, that is, an *incident motor action*, and an *incident motor nerve*.

May I not affirm that this statement is the pure expression of *facts*, and destitute of *all hypothesis*? for I speak not of *fibres* nor of *filaments*, about which there has been so much discussion; but of an obvious action in an obvious nerve. These two things are as "*demonstrated*" as any in physiology.

This incident motor nerve thus *demonstrated*, is but one of a *system* of incident nerves, of which I must speak to you. But, before I proceed to that subject, allow me to detain you one moment, to say that what I have just stated is *not* to be found in the admirable works of Prochaska, or of M. Flourens, or of any physiologist with whose labours I am acquainted. Yet it is, as I have stated, the *basis* of that *system of nerves*, and, I may add, of *functions*, to which I have alluded; and it is that basis without which that system could not be satisfactorily established.

I have hitherto spoken of the *trunk* of one of the incident, excitor, or motor nerves. But I must now inform you that the extreme terminations or distributions of these nerves possess the excitor or motor, or, as I have ventured to express it, the excito-motory power, in a much higher degree than their trunk. If, having removed the head of a frog, you divide the integuments along the back, and raise them by means of the forceps, you will observe the trunks of many cutaneous nerves; now, if you irritate these trunks, no movements follow; but, if you irritate the cutaneous textures on which they are distributed, movements of a very energetic character are produced. (See my Memoirs, p. 48, § 21.)

I now proceed with my detail of the series of

experiments on the decapitated turtle. If you irritate the nostrils, or the palatine fringes, you excite, through the *trifacial nerve* an act of inspiration. If you irritate the larynx by passing a probe along the trachea, you produce the same effect through the medium of the *pneumogastric nerve*. A similar phenomenon is produced by irritating the trunk of the pneumogastric, or the substance of the spinal marrow, near the points of their division respectively.

Have not these experiments proved, without one word of argument, the existence of *other two incident nerves* possessing the *special excito-motory property*? Do you not perceive the beginnings of the *system of incident excitor nerves* to which I have alluded?

Do you not further perceive that these nerves are not only exciters of muscular action, but, in the case last detailed, of the *act of inspiration*? And do you not now plainly see the application of the "*vis motoria*," the "*excitabilité*," and of the system of incident nerves, through the medium of which it acts, to *physiology*?

This *system* of nerves is further displayed in this diagram and table, and the *extensive class of functions*, for such it is, of which it is the *anatomy*, is displayed in this table.

Until the period of my researches, I believe that the pure motor power of the nervous system had never been applied to physiology,—that the idea of an *incident motor nerve* did not exist; and, consequently, that the system of such nerves, and the special physiology of this system, was totally unknown.

Why do I mention these things? Because it has been eagerly attempted to transfer the credit of what I have done to others, and especially to Prochaska, on the one hand, and to M. Flourens on the other. But I will ask you, whether the idea of an *incident motor nerve* exists in either of these authors? and if not, whether the *system* of such nerves, with their *physiology*, can exist in them? In fact, Prochaska goes no further than Whytt; he alludes to *reflex* action, as seen in the *very obvious pathological* phenomena of sneezing, coughing, &c., and then all is confusion; for with these phenomena are associated, as of a *similar* character, the motion of the arm to the head, *said* to take place in apoplexy! the motion of the eye-lids when a person approaches your eye with a finger! the motion of the *heart!* of the *intestines!* &c. It is impossible to argue with persons with such confusion of ideas. And for M. Flourens, he does not make the slightest allusion to an *incident motor action*, or an *incident motor nerve*, or to a *reflex* action; and yet all the functions to which I now refer are reflex, and effected by means of such a power, and through the medium of such nerves! On the contrary, M. Flourens states a thousand times in his beautiful work, which is a model of physiological investigation, that respiration, for example, has its *primum mobile* in the medulla oblongata. It has its *primum mobile* in *incident excito-motory nerves*.

Now let me return to this table and diagram.

* A similar experiment was performed both by M. Flourens and Professor Muller; (see *Système Nerveux*, 113; *Handbuch*, t. i., p. 632, omitted in the *Trans.*) but in these experiments the animal was not decapitated; the action of the special motor power could not, therefore be distinguished from the influence of *sensation and volition*; and the experiment is, therefore, *not the same*.

*Anatomy of the true Spinal, or Excito-motory System.***I. The Incident, Excitor Branches.**

1. The trifacial, arising from
 1. The eyelashes.
 2. The alæ nasi.
 3. The nostril.
 4. The fauces.
 5. The face.
2. The pneumogastric, from
 1. The pharynx.
 2. The larynx.
 3. The bronchia.
 4. The cardia,—kidney and liver.
3. The posterior spinal, arising from
 1. The general surface.
 2. The glans penis and clitoridis.
 3. The anus.
 4. The cervix vesicæ.
 5. The cervix uteri.

II. The True Medulla Oblongata and Medulla Spinalis, the Centre of the System.

III. The Reflex, Motor Branches.

1. The trochlearis } Oculi.
2. The abducens }
3. The minor portion of the fifth.
4. The facial, distributed to
 1. The orbicularis.
 2. The levator alæ nasi.
5. The pneumogastric, or its accessory.
 1. The pharyngeal.
 2. The œsophageal.
 3. The laryngeal.
 4. The bronchial, &c.
6. The myo-glossal.
7. The spinal, distributed to the
 1. Diaphragm, and to
 2. The intercostal and } muscles.
 3. The abdominal }
8. The sacral, distributed to
 1. The sphincters.
 2. The expulsors, ejaculators, the fallopian tubes, the uterus, &c.

All the nerves represented on this, the left of the table, are *incident motor nerves*. Some of them are *sentient*; but, whether sentient or not, they are demonstrably *motor*, and, whilst they are *motor*, they are *incident*. I beseech you not to allow these two words—these two ideas—to be disjoined in your mind; and there will then be an end of all dispute.

And now let me recall your attention to this table.

Physiology of the Reflex, Excito-motory System.

- The action—
1. Of the eyelids.
 2. Of the orifices.
 1. The larynx;
 2. The pharynx.
 3. Of the ingestion.
 1. Of food.
 1. In suction;
 2. In deglutition.
 2. Of air;
 3. Of semen.
 4. Of exclusion.
 5. Of the expulsors, or of egestion.
 1. Of the fæces;
 2. Of the urine;
 3. Of the semen;
 4. Of the fœtus.
 6. Of the sphincters.

It presents you with the *physiology* which corresponds to the *anatomy*. It presents you with an arrangement of the functions of *ingestion* and *egestion*, of the *orifices* of the *sphincters*. No one has pretended, except in the vaguest manner, and under the shelter of the phrase "*sympathetic actions*," that this extensive view of the subject had been taken before. Professor Müller distinctly states (Trans. p. 803) that the *reflex actions* have a limited place in *physiology*. Prochaska does not name of these functions!! M. Flourens does not name one of them!!! And certainly no one has traced these functions to the *incident action* of the *vis motoria*, in *incident* and purely *motor* nerves, for the very existence of

such nerves was unknown. In a word, gentlemen, it was impossible to explain the anatomy or the physiology of *deglutition*, of *inspiration*, of the various *expulsions*, until I published my discoveries of the true spinal marrow, and the excito-motory system of nerves.

What shall I say of the *pathology* of this system? It was impossible that such facts as teething and tetanus, facts as *obvious* as those already mentioned, should have been otherwise than associated with the nerves. How could the whole class of *spasmodic diseases*,—*centric*, *centripetal*, and *centrifugal*, (to use words not my own,) be traced to, and associated with, a part of the nervous system still unknown? One of the most beautiful facts which I shall have to explain to you, is that of the very parts or organs enumerated in the physiology, being precisely those involved in the pathology; so that you have, in many instances, but to recall the former, in order that you may recollect the latter, and in this manner you will be greatly assisted in remembering the *symptoms* of the class of *spasmodic diseases*.

In conclusion, I must observe that the true spinal or excito-motory system, being the system of ingestion and expulsion, of the orifices and sphincters, is the system of actions on which depend

1. The preservation of the individual,* and
2. The continuation of the species.

It is in this large and extensive sense that the excito-motory system must be viewed, if we would see its real magnitude and importance. It is in this sense that it will be viewed by the anatomists and physiologists of a future age.

*I must again guard my reader against supposing that I use the first of these phrases in the sense in which Prochaska has used a similar phrase. Prochaska adduces, as an example of what he means, the acts of sneezing, coughing, vomiting, which certainly tend to remove what would be injurious, and may be supposed to effect "*nostri conservatio*."